

ADA030550

UNITED STATES ARMY AVIATION BOARD
Fort Rucker, Alabama

116F659

ATBG-DT-AVN-5558

SUBJECT: Report of Test, Project Nr AVN 5558, Expedited Evaluation of the US Air Force Type HGU-4/P Sunglasses

TO: Commanding General
United States Continental Army Command
Fort Monroe, Virginia
ATTN: ATDEV

DDC
RECEIVED
OCT 7 1976

1. AUTHORITY. Letter, ATDEV-6 413.7, Headquarters, USCONARC, 5 November 1958, subject: "Expedited Evaluation of the US Air Force Type HGU-4/P Sunglasses."

2. PURPOSE. *This study was designed in order* to conduct an expedited evaluation of US Air Force Type HGU-4/P Sunglasses to determine the suitability of this equipment for use by Army aviators.

3. SCOPE.

a. The subject equipment was worn by United States Army Aviation Board and United States Army Aviation School aviators on the ground and during flights conducted in fixed- and rotary-wing aircraft during December 1958 and January 1959. Each aviator filled out a questionnaire pertaining to his evaluation of pertinent parameters of sunglass qualities and personal comments. Professional evaluation and comments were received from the US Army Hospital, Fort Rucker, Alabama. A comparative evaluation was made with the currently issued Army sunglasses (Type G-2, Specs, No. MIL-G-6250).

b. During this evaluation, consideration was given to the following:

- (1) Pressure on nose, ears, and head
- (2) Suitability for use in flight
- (3) Integration with other personal equipment used by the aviator in flight
- (4) Climatic effects

Approved for public release;
distribution unlimited.

App

Unlimited

FOR OFFICIAL USE ONLY

REMOVAL OF PROTECTIVE MARKING CANNOT BE PREDETERMINED

Dr. A. C. Caspaddle
USAADTA(P)
1 APR 76
AR 340-16

02651

ATBG-DT AVN 5558

SUBJECT: Report of Test, Project Nr AVN 5558, "Expedited Evaluation of the US Air Force Type HGU-4/P Sunglasses"

- (5) Ease of adjustment
- (6) Glare reduction
- (7) Ruggedness and shattering characteristics
- (8) Scratch resistance
- (9) Field of vision
- (10) Adequacy of case

4. GENERAL INFORMATION.

a. Background. The Standard F-2 (arctic) and G-2 sunglasses are at present being replaced in the US Air Force by an improved model designated the HGU-4/P, which was developed to alleviate several unsatisfactory features associated with the F-2 and G-2 sunglasses, namely: weight, nasal discomfort, difficulty of removing or donning, inability to integrate with other personal equipment, etc. The US Air Force has taken action to adopt the HGU-4/P sunglass as standard and is effecting procurement under Specification MIL-G-25948 (USAF) which replaced MIL-G-6250B for Air Force procurement.

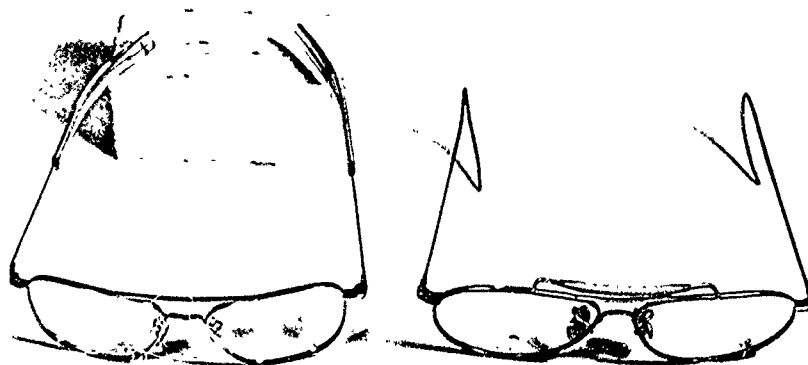
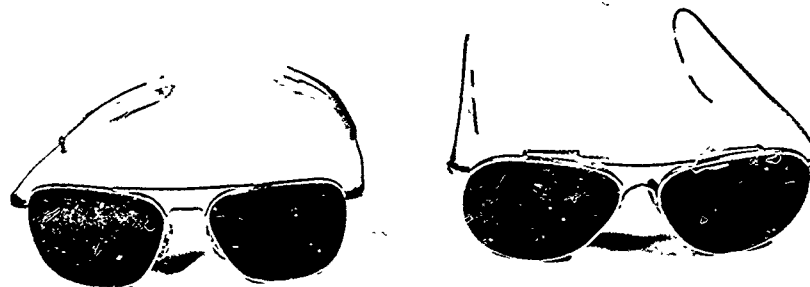
b. Description of Materiel.

(1) The USAF Type HGU-4/P sunglasses, designed by the American Optical Company, are similar in certain respects to the standard Type G-2 sunglasses. The weight of the HGU-4/P lenses is 17 grams and the frame weighs 14 grams. Compared with the total weight of the G-2 sunglasses, 40 grams, a reduction of about 22 percent in weight has been achieved. The HGU-4/P lens area is approximately 25 percent less than the G-2 lens area.

(2) The type HGU-4/P sunglasses have $4\frac{1}{2}$ -inch temples, a 20mm bridge, and 49-by 42mm lenses. In addition to the above, library temples are provided instead of the wrap-around metal type, and the frame is gold plated instead of rhodium plated.

(3) Additional background development, design factors, and improvements can be found in reference a, paragraph 9.

5. TESTS. The test of the HGU-4/P sunglasses was performed using two basic sources of data: an optometrist's evaluation and the results of a survey questionnaire.



Pictured left are the HGU-4/P Sunglasses
and on the right, the G-2.

ATBG-DT AVN 558

SUBJECT: Report of Tests, Project Nr AVN 5558, "Expedited Evaluation of the US Air Force Type HGU-4/P Sunglasses"

a. Optometrist's Evaluation. The optometrist at the US Army Hospital at Fort Rucker compared the HGU-4/P sunglasses with the Type G-2 glasses (the frame of the HGU-4/P Sunglasses has been issued with prescription tinted lenses to Army aviators for about six months). Overall, it was determined that the HGU-4/P sunglasses are preferable to the Type G-2 sunglasses, especially with respect to the temple construction, lighter weight, and stability of fit. It was determined that the HGU-4/P compared to the Type G-2 as follows:

	<u>HGU-4/P</u>	<u>Type G-2</u>
(1) <u>Frame.</u>		
(a) Adjustability of glasses	Better	
(b) Temple	More comfortable	
(c) Frame will probably --	Last longer	
(d) The upper cross bar	Might cut forehead in accident	Has plastic pad
(e) In an accident, temple	Safer	Might cut ear
(f) Bridge pad	Regular	Jumbo
(g) Field of vision	Equivalent	Equivalent
(h) Eye piece temple joint	Stronger	
(2) <u>Lens.</u>		
(a) Aberrations	Equivalent	Equivalent
(b) Tint of glass, from practical point of view	Equivalent	Equivalent
(c) When dropped 30 inches	Did not break	Did not break

ATBG-DT AVN 558

SUBJECT: Report of Test, Project Nr AVN 5558, "Expedited Evaluation of the US Air Force Type HGU-4/P Sunglasses"

(3) Carrying Case. A plastic-lined case which partially encloses the glasses was issued with the HGU-4/P sunglasses. This case was not considered as desirable as the case now being issued by USAH with the HGU-4/P sunglasses containing prescription lenses. The latter case completely encloses the glasses and can be strapped on the Quarter-master-issued belts. However, this case is lined with metal wrapped in fabric. A case could be considered ideal that would completely enclose the glasses, strap on a belt, and be lined with the white plastic material as found in the case tested. The white plastic material will not scratch the lens and it also affords more rigidity to the case.

b. Aviator Survey Questionnaire Results. A survey questionnaire was issued to forty Army aviators, soliciting their evaluation of the HGU-4/P sunglasses in flight and in ground environment. The greater number of aviators preferred the new HGU-4/P glasses to the Type G-2 sunglasses and considered them:

- (1) More comfortable (temple in particular)
- (2) Easier to don and doff with helmets and headsets
- (3) More compatible with oxygen masks.

c. Climatic Effects. During the expedited evaluation the glasses were tested only under the ambient conditions present at Fort Rucker during December and January 1959.

7. CONCLUSION. The HGU-4/P sunglasses are more suitable for use by Army aviators than the Type G-2 Sunglasses.

8. RECOMMENDATIONS. It is recommended that:

a. The US Air Force Type HGU-4/P sunglasses be considered suitable for use by Army aviators.

b. The Type HGU-4/P Sunglasses be type-classified Standard and the previous Standard, Type G-2, be reclassified as Substitute Standard.

9. COORDINATION. This report has been informally coordinated with the US Army Aviation School.

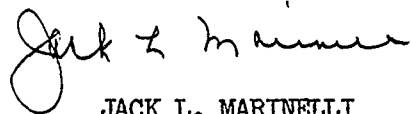
10. REFERENCES. Report of Project Nr 6332, Task No. 63609, USAF, Aero Medical Laboratory, Wright Air Development Center, undated, subject: "Development of an Improved Air Force Sunglass."

ATBG-DT AVN 558

SUBJECT: Report of Test, Project Nr AVN 558, "Expedited Evaluation of the US Air Force Type HGU-4/P Sunglasses"

b. Letter, TCREC-MC 400.1141/33521, Headquarters, US Army Transportation Research and Engineering Command, 23 October 1958, subject: "Evaluation of Air Force Type HGU-4/P Sunglasses," with one indorsement.

c. Letter, TCREC-MS 400.1141/3921, Headquarters, US Army Transportation Research and Engineering Command, 14 August 1958, subject: "Evaluation of the HGU-4/P Sunglass," with one inclosure.



JACK L. MARINELLI
Colonel, Artillery
President